

# Indiana Michigan Power Summer 2005 Preparedness

---

## Presentation to the Indiana Utility Regulatory Commission

May 5, 2005



# I&M Presenters

---

**John Sampson**

*VP – External Affairs*

**Bob Bradish**

*VP – Transmission and Market Analysis*





## Peak Demand – 2004

---

|                          | <b>Date</b> | <b>Hour<br/>Ending<br/>EST</b> | <b>Peak<br/>Demand<br/>MW</b> |
|--------------------------|-------------|--------------------------------|-------------------------------|
| I&M                      | July 22     | 1500                           | 4,016                         |
| AEP System-<br>East Zone | Aug. 3      | 1700                           | 19,049                        |

# I&M Summer 2005 Peak

## Summer 2005 – Projected MW

|                            | June         | July         | August       |
|----------------------------|--------------|--------------|--------------|
| Peak Internal Demand       | 4,003        | 4,242        | 4,180        |
| Committed Off-System Sales | 163          | 238          | 241          |
| <b>Total Demand</b>        | 4,166        | 4,480        | 4,421        |
| Interruptible Demand       | (226)        | (226)        | (226)        |
| <b>Net Demand</b>          | <b>3,940</b> | <b>4,254</b> | <b>4,195</b> |

## I&M Resources to Meet 2005 Peak

---

|                         | June         | July         | August       |
|-------------------------|--------------|--------------|--------------|
| Installed Capability    | 5,044        | 5,042        | 5,042        |
| Purchases               | 251          | 251          | 251          |
| <b>Total Capability</b> | <b>5,295</b> | <b>5,293</b> | <b>5,293</b> |

# I&M Resources -- Reserve Margins

Interruptible Demand = 226 MW

|  | June          | July          | August        |
|--|---------------|---------------|---------------|
| Total Capability                             | 5,295         | 5,293         | 5,293         |
| Total System Demand                          | 4,166         | 4,480         | 4,421         |
| Reserve Margins<br>Before Interruptibles (%) | 1,129<br>27.1 | 813<br>18.1   | 872<br>19.7   |
| Reserve Margins<br>After Interruptibles (%)  | 1,355<br>34.4 | 1,039<br>24.4 | 1,098<br>26.2 |

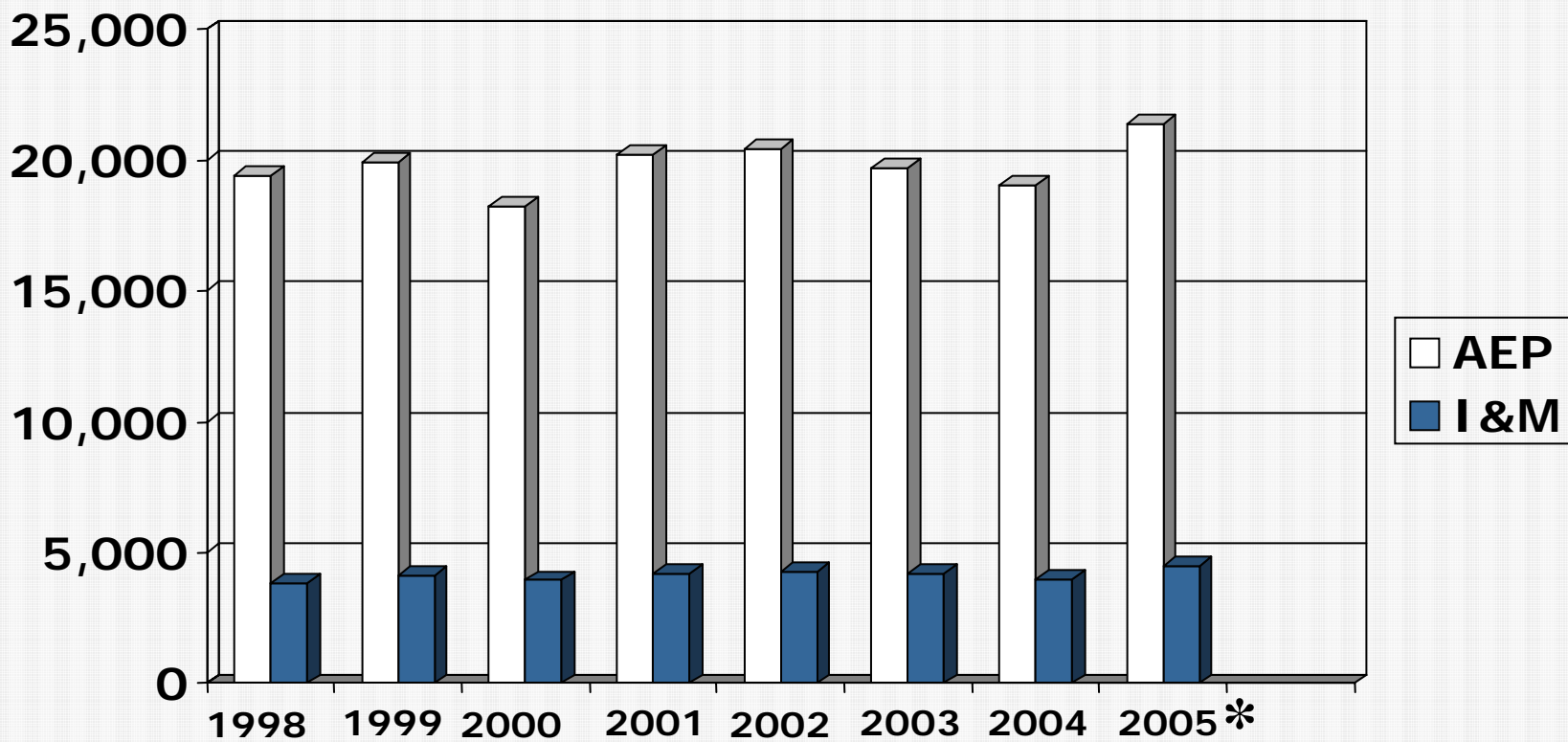
All numbers are MW except where indicated.

# Summer 2005 Peak AEP System-East Zone

| Summer 2005 – Projected MW |               |               |               |
|----------------------------|---------------|---------------|---------------|
|                            | June          | July          | August        |
| Peak Internal Demand       | 18,943        | 20,428        | 19,790        |
| Buckeye Power Load         | 1,379         | 1,428         | 1,428         |
| <b>Total Demand</b>        | <b>20,322</b> | <b>21,856</b> | <b>21,218</b> |
| Interruptible Demand       | (475)         | (475)         | (475)         |
| <b>Net Demand</b>          | <b>19,847</b> | <b>21,381</b> | <b>20,743</b> |

# Summer Peaks

## AEP System-East Zone /I&M



\* 2005 Projected

# Resources and Reserve Margins AEP System-East Zone

Interruptible Demand = 475 MW

|  | June          | July          | August        |
|--|---------------|---------------|---------------|
| Total Capability + Purchases                 | 25,097        | 24,662        | 24,662        |
| Total System Demand                          | 20,322        | 21,856        | 21,218        |
| Reserve Margins<br>Before Interruptibles (%) | 4,775<br>23.5 | 2,806<br>12.8 | 3,444<br>16.2 |
| Reserve Margins<br>After Interruptibles (%)  | 5,250<br>26.5 | 3,281<br>15.3 | 3,919<br>18.9 |

All numbers are MW except where indicated.

# Purchase Power Agreements AEP System-East Zone

|              | June         | July         | August       |
|--------------|--------------|--------------|--------------|
| OVEC         | 918          | 918          | 918          |
| Summersville | 20           | 15           | 16           |
| Mone         | 447          | 447          | 447          |
| <b>Total</b> | <b>1,385</b> | <b>1,380</b> | <b>1,381</b> |

Additional purchases from market resources, which include Indiana merchant plants, may be made if a need arises. But the amounts and types of transactions will not be known until the specific circumstances are identified.





# Reducing Peak Demand

---

- Interruptible Loads (Indiana 226 MW at peak)
  - Contract Service Interruptible Power tariff
- Load Management Services
  - Emergency Curtailable Service
  - Price Curtailable Service
- Time-of-Day Rates
  - 2,600 Indiana customers
  - 16,500 Off-peak water heating systems
  - Off-peak demand forgiveness for large commercial, industrial customers

# Life in a PJM World

---

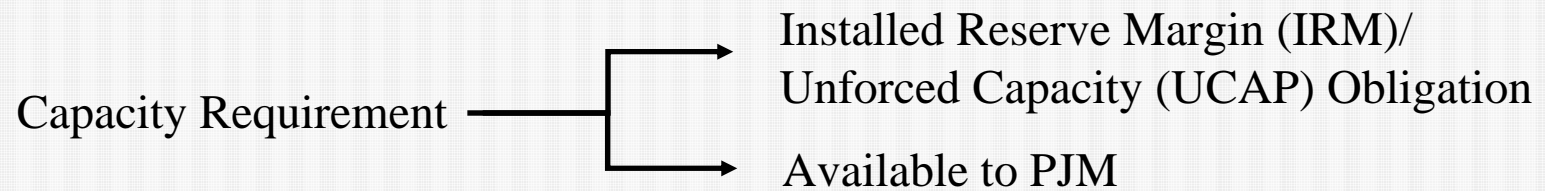
# Major Elements of the PJM RTO

---

- Capacity Requirement
- Unit Commitment and Dispatch
- Congestion Management
- Reliability/Operations
- Settlement

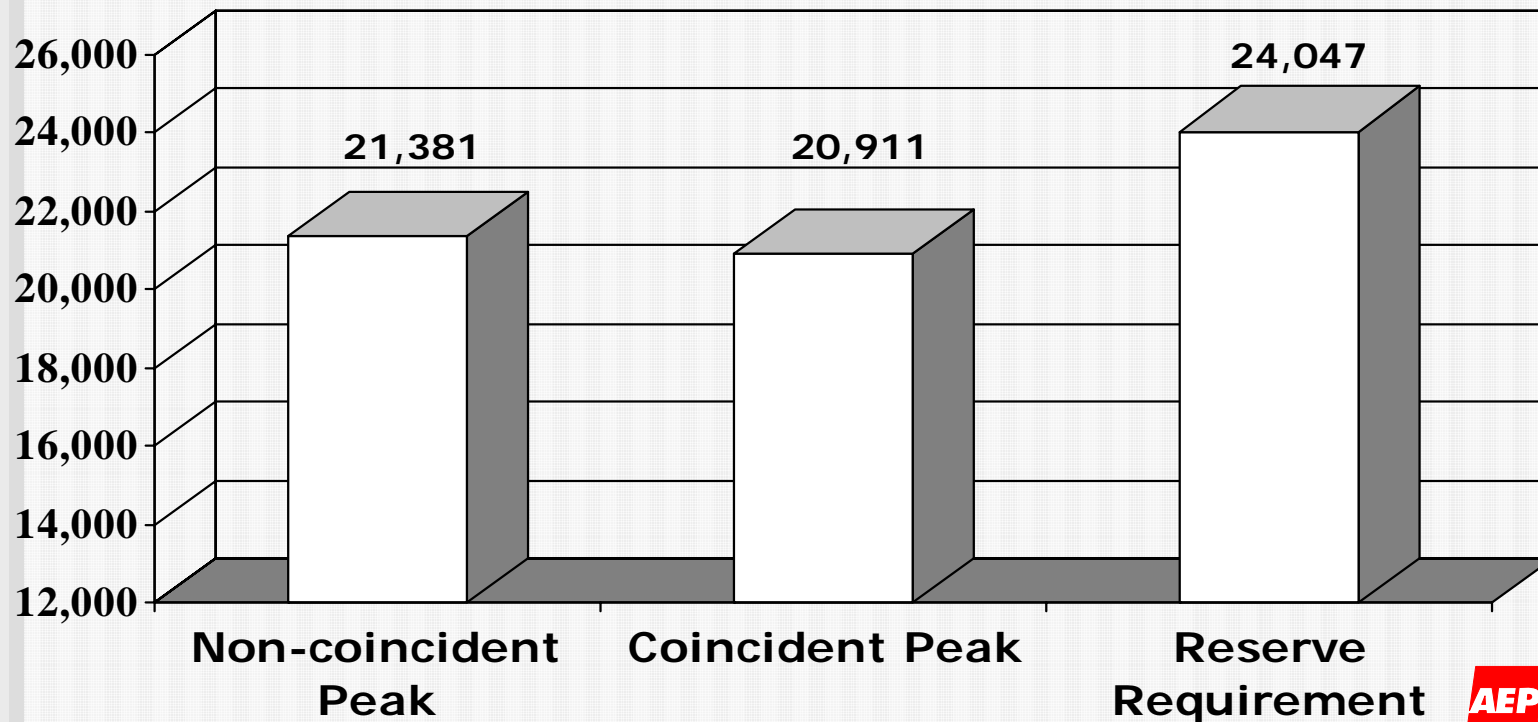
# Major Elements

---



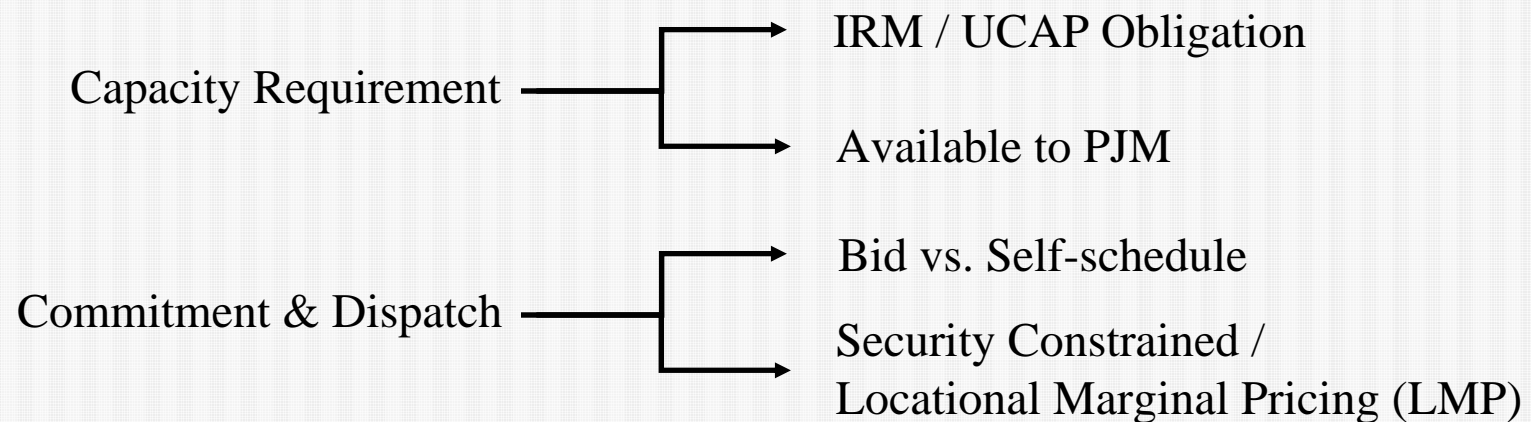
# PJM Capacity Requirement

**IRM = 15%, Diversity = 2.2%, Eq RM = 12.5%**

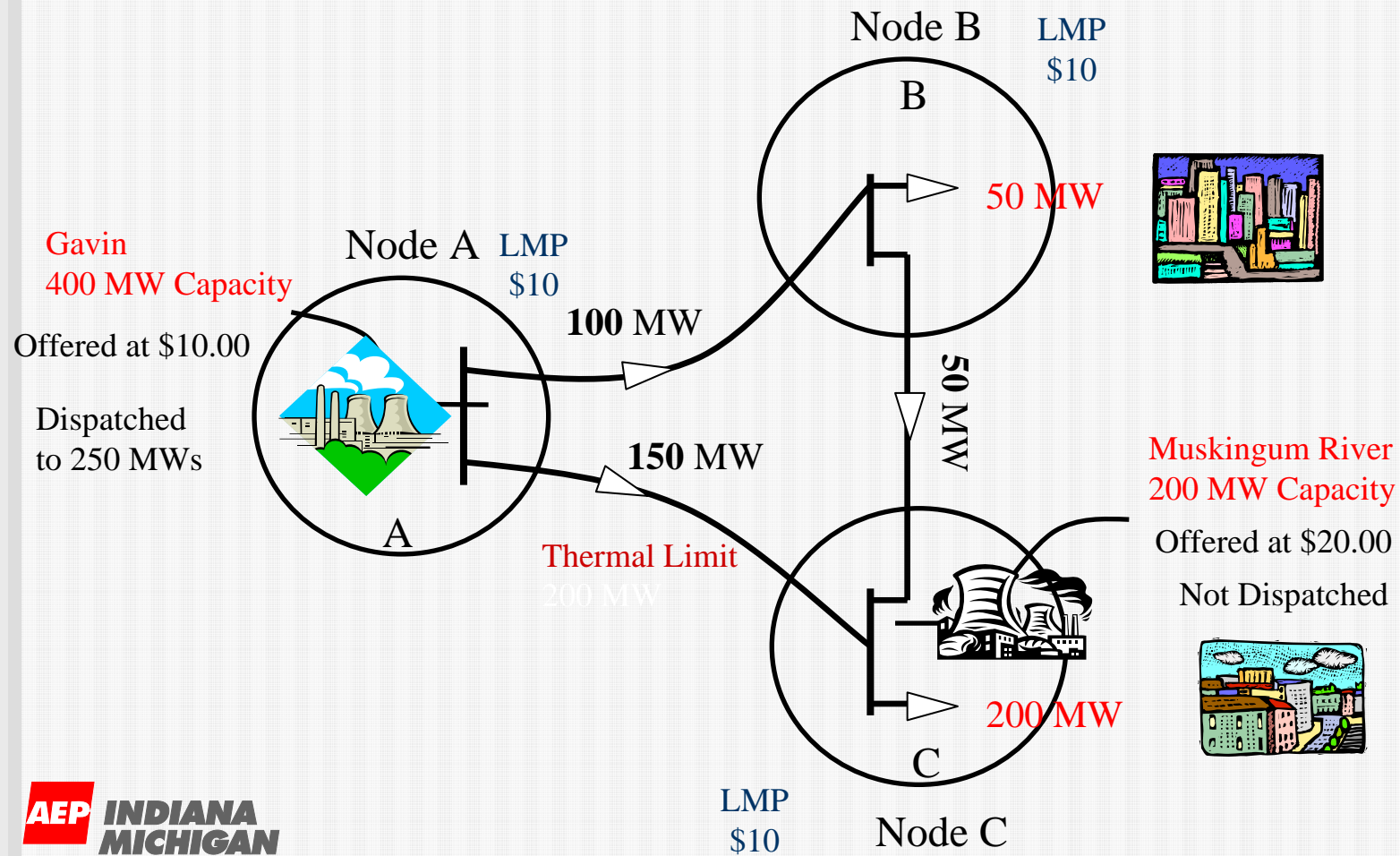


# Major Elements

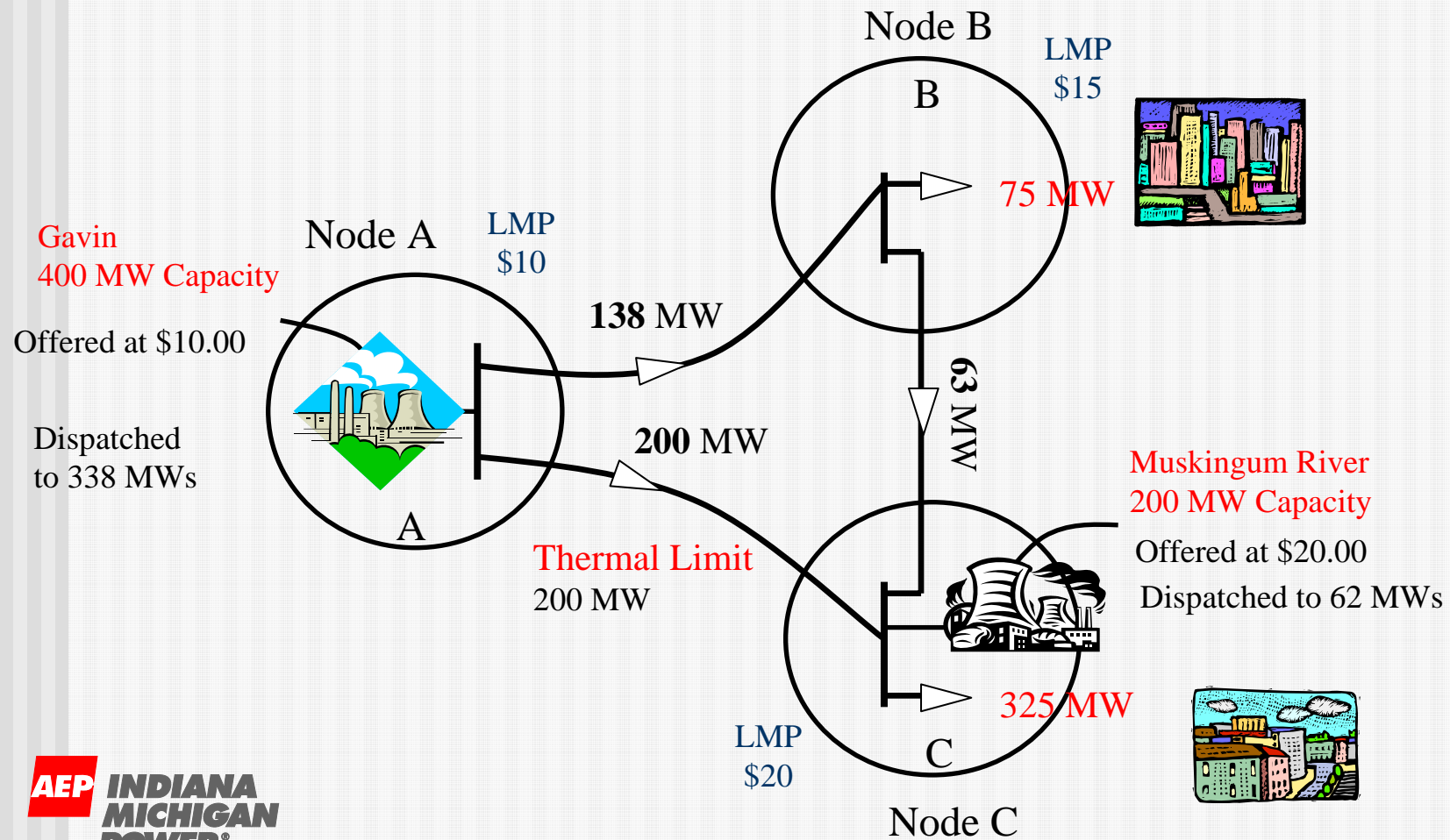
---



# Unconstrained System Valid Economic Solution



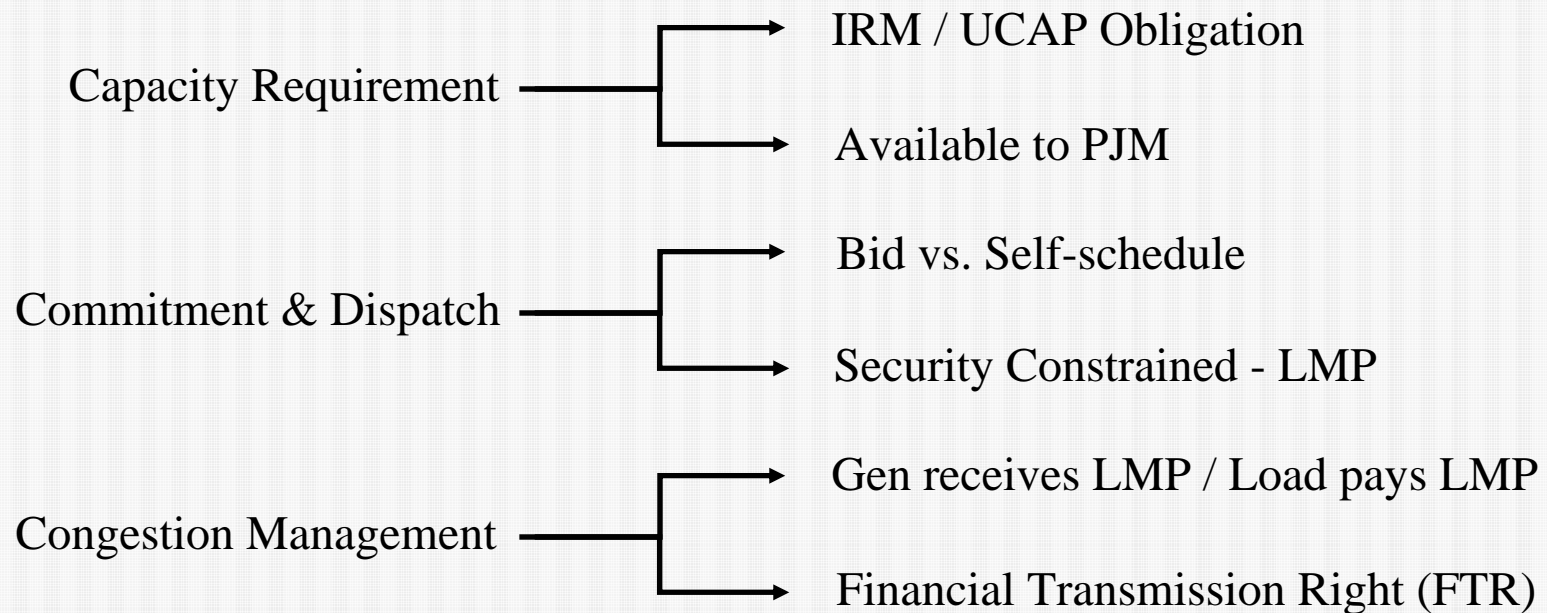
# Constrained System Valid Economic Solution





# Major Elements

---



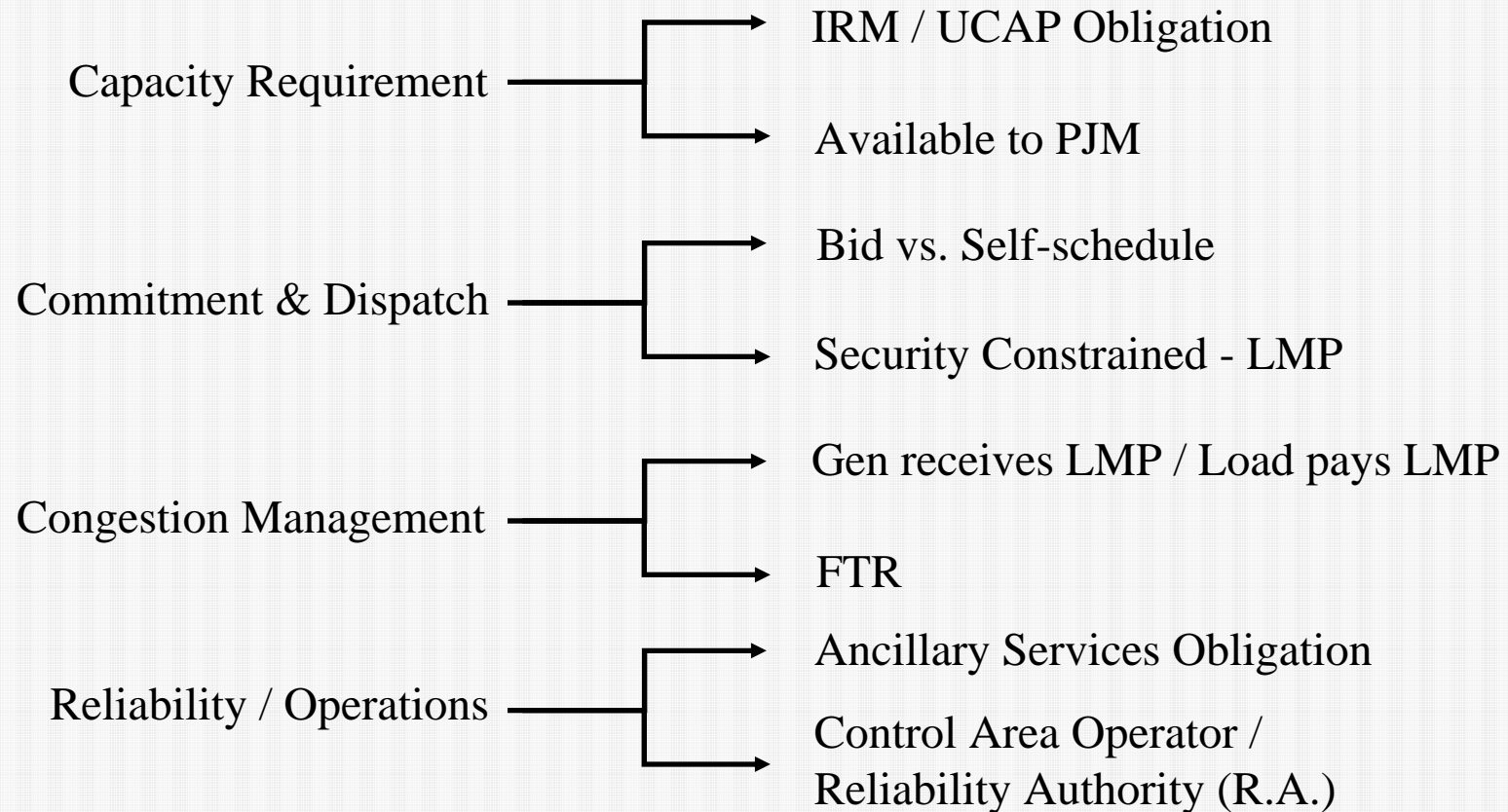
# Financial Transmission Rights



$$\text{Congestion Cost} = [\$30 - \$25] = \$5 / \text{MWh}$$

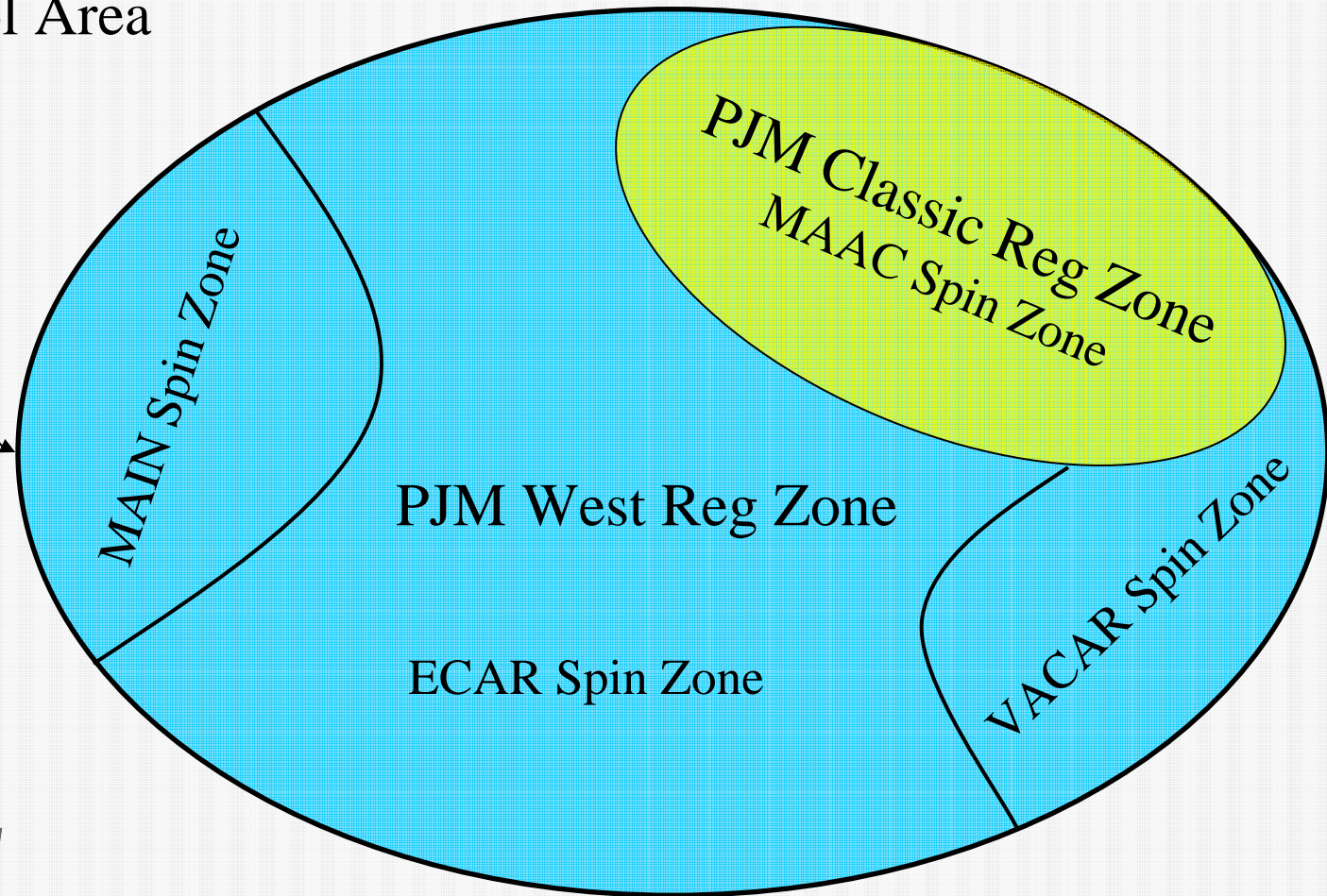
$$\text{FTR Revenue} = \$5 / \text{MWh} \times 100 \text{ MW} = \$500 / \text{hr}$$

# Major Elements

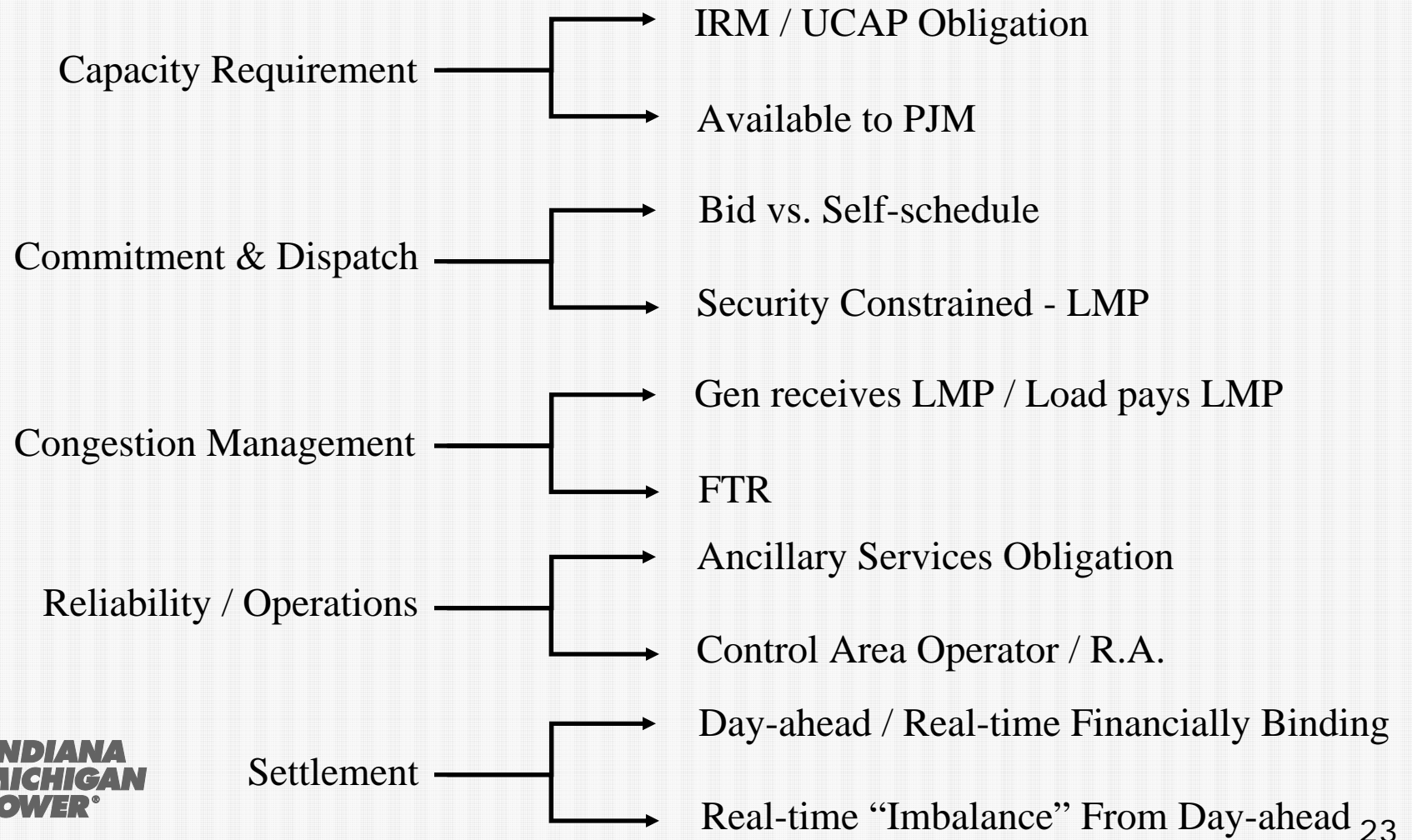


# Reliability / Operations

PJM Control Area

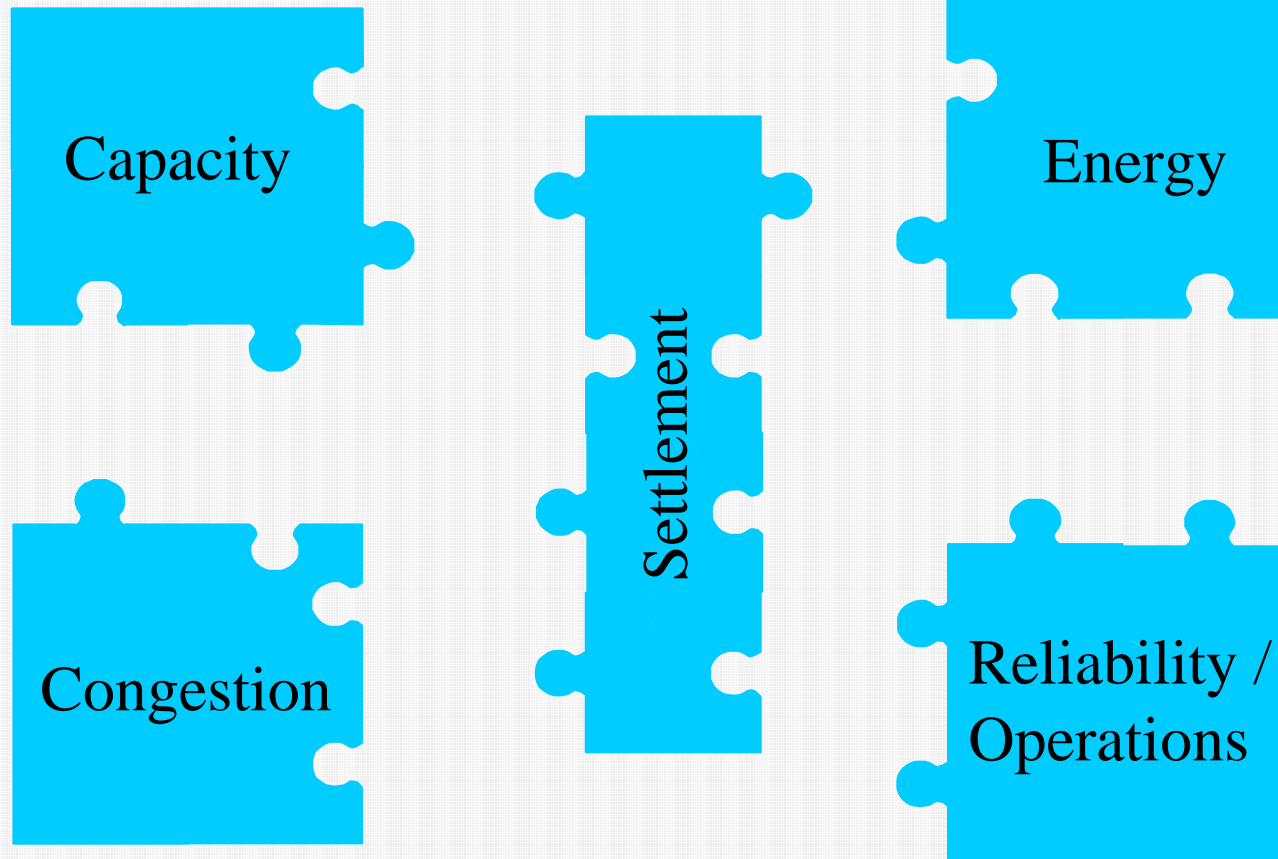


# Major Elements



# The Elements Fit Together

---



# MISO Day 2

---

- No significant impact on Indiana Michigan Power's operations as a result of MISO Day 2 start-up
- No impact on AEP's capacity obligation or its available supply
- No impact on AEP's pool operation and settlement
- MISO and PJM are now using a market-to-market approach to congestion management
  - ✓ No noticeable impact on congestion patterns that impact operations
- Transactions between AEP East and AEP West are now subject to congestion across MISO but AEP received an FTR to hedge the congestion

---

# Questions?